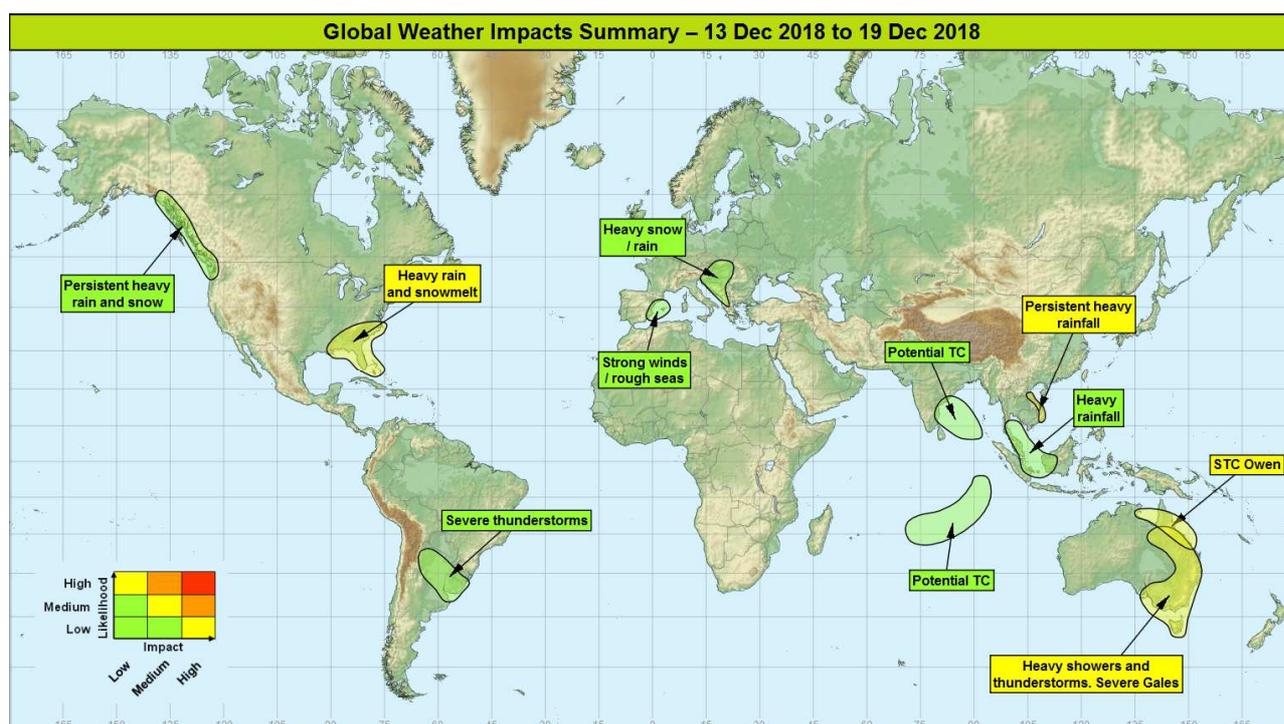


## Global Weather Impacts – Thursday 13<sup>th</sup> December to Wednesday 19<sup>th</sup> December 2018

Issued on Thursday 13<sup>th</sup> December 2018

### HEADLINES

- Severe Tropical Cyclone Owen has rapidly strengthened and is expected to impact Queensland this weekend.
- Continued persistent and locally heavy rainfall for Vietnam, leading to further flooding.
- Heavy rain and snowmelt later could lead to severe flooding in parts of the southeastern USA.



### DISCUSSION

#### Tropical Cyclones

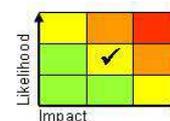
##### Severe Tropical Cyclone Owen (Australia) Weather

Owen has continued to strengthen through the past 24 hours over the Gulf of Carpentaria and is now a category 3 system with sustained winds now in excess of 95 mph close to the coast of Northern Territory. Currently slow moving, Owen is expected to turn back east and head toward the coast of Queensland where it is forecast to make landfall as a Category 4 system early Friday. Owen will most likely weaken overland the track close to or offshore the Queensland Coast through the weekend and into the early part of next week.

##### Discussion

The warm waters of the Gulf of Carpentaria and a low wind shear environment have allowed Owen to rapidly intensify. Another 24 hours or so in this environment may see Owen become a Category 4 system prior to landfall, equivalent to a major hurricane, after which passage over land will weaken Owen significantly. There remains a reasonable model spread in terms of its track once it makes landfall across NW Queensland early Friday UK time. EC and GFS favour a track along the coast of NE Queensland, while GM favours a track slightly to the east over the Coral Sea. This help Owen maintain itself a little longer.

##### Expected Impacts



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Damage, disruption, and danger to life due to destructive winds will be the primary hazard, although the area is sparsely populated and used to tropical cyclones. Flash and river flooding could occur across northern Queensland, and should Owen hug the coast flooding is likely quite widely with some impacts for cities such as Townsville and Cairns, although there is now a reduced risk of Owen reaching as far south as Brisbane.

### Potential Tropical Cyclones

#### Bay of Bengal, eastern India and Sri Lanka

##### **Weather**

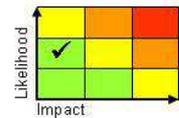
A well marked low pressure system lies over the southern Bay of Bengal over 500 miles east of Sri Lanka, and is expected to see some modest strengthening through the next 24 to 48 hours. There is now reasonable model agreement for the system to track broadly north-west toward the coast of north Tamil Nadu or southern Andhra Pradesh through the next three days.

##### **Discussion**

High sea surface temperatures coupled with moderate vertical wind shear should allow a modest strengthening of this system through the next few days. All main deterministic models now indicate a tropical system developing within the next few days. Ensemble track forecasts now strongly favour the system tracking toward the eastern Indian coast later this weekend, with only a tiny minority now showing a threat to Sri Lanka.

##### **Expected Impacts**

The most probable impacts are from heavy rain along the Indian coastline bringing potential flash flooding and landslides over higher ground a little further inland, with a lower probability of damage/disruption due to strong winds.



#### Southern Indian Ocean

##### **Weather**

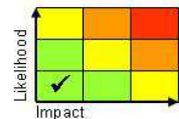
There are increasing indications that a tropical cyclone will develop in the southern Indian Ocean this weekend, almost mirroring the development expected in the Bay of Bengal. Should it indeed develop, it is not expected to impact land.

##### **Discussion**

As the MJO moves from the Indian Ocean and into the Maritime Continent, conditions become more favourable for tropical cyclogenesis in the Southern Indian Ocean due to shedding of Equatorial Rossby Waves (as in Bay of Bengal on the other side of the equator). Both deterministic and ensemble products suggest the potential for one dominant tropical cyclone develop during the later part of this week.

##### **Expected Impacts**

No impacts expected on land. Rough seas are possible.



### Europe

#### Eastern Spain and The Balearics

##### **Weather**

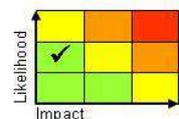
A spell of very strong winds is expected to affect parts of eastern Spain and The Balearics late Thursday and into Friday. Gusts of wind may reach 50 to 60 mph and are likely to generate some very large waves over parts of the western Mediterranean.

##### **Discussion**

A sharpening upper trough will cross Iberia on Thursday before undergoing disruption over the western Mediterranean. This will force cyclogenesis close to the eastern coast of Spain with the resultant low pressure system (named Flora by the Spanish Met Agency) then expected to track east through Friday.

##### **Expected Impacts**

Winds are likely to cause significant disruption to transport, especially aviation. Some minor damage to property and power lines is possible. Large waves may lead to some coastal impacts in the region.



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**Croatia, Bosnia, Hungary, Slovakia, Slovenia, Austria, Serbia, Montenegro, Albania**

**Weather**

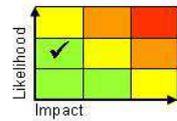
A significant spell of snow is expected to develop as the remnants of the low described above affecting Spain pushes northeast into the cold air which will have become entrenched across much of Europe. Some places could see over 30 cm of snow. Further south heavy rainfall is likely to affect parts of Montenegro, Albania and southern Croatia.

**Discussion**

There is good agreement for this development and evolution. The frontal boundaries to the N of the main centre then being drawn NE'ward ahead of an increasingly complex forcing pattern. The complexity lends lowering confidence in the subsequent NE'ward extent of any snowfall, but common to all models is the idea of a warm, moist airmass pushing up into the much colder continental air generating significant snowfall across the Dinaric Alps and countries adjacent to the Adriatic coast, with significant, orographically enhanced rainfall further south.

**Expected Impacts**

Heavy snowfall is likely to lead to significant transport disruption, and could lead to some communities being temporarily cut off. Heavy rainfall could lead to some flash flood impacts.



**North America**

**Southeast United States (especially North Carolina/Virginia), northern Bahamas.**

**Weather**

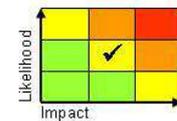
An active weather system is expected to develop through today across the southern plains, then drift slowly east across the SE USA through this weekend. Alongside the potential for around 100-200 mm of rain, melting snow from the significant accumulations present across parts of North Carolina/Virginia could see the equivalent of over 300 mm of rainfall being discharged into the river systems in a day. Thunderstorms to the southeast of the main rain area could bring bursts of heavy rain and the odd tornado.

**Discussion**

Following the severe winter storm which brought significant snowfalls (40-60cm) to North Carolina and Virginia, a quiet and fairly cold spell has seen only a slow thaw. By Friday another significant rain-bearing system is expected to affect some of those areas affected by the previous winter storm, with the combination of heavy rain and warm tropical air melting the remaining snow and potential for severe flash and possibly river flooding. 100-200mm on top of the snow could lead to the equivalent of over 300mm of rainfall entering the river system in a single day, close to 4 times the monthly average for December. In addition, thunderstorms to the SE of the main rain area could bring localised flash flooding, and the odd tornado.

**Expected Impacts**

River flooding is likely to be the main impact, which could possibly be quite widespread in parts of the Carolinas, but could also affect parts of Virginia and eastern Tennessee. Significant flooding of homes and businesses could occur, with localised transport disruption. Localised flash flooding and wind damage elsewhere from thunderstorms.



**Far west of Canada, and extreme northwest of United States**

**Weather**

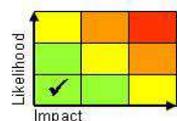
A succession of Pacific weather systems will see 300 to locally 500 mm of rain build up through the coming week, although much of this will be over high ground areas and locked up as snow. This is a fairly typical occurrence for this time of the year in this region. Vancouver could see in excess of 200 mm of rain through the week, which is over half a month's worth of rainfall.

**Discussion**

A number of frontal systems are expected to drive in from the Pacific, with a strong orographic modulation to ppn. Despite this being a fairly usual occurrence here for the time of year, models do show anomalously high rainfall totals with respect to climate. Vancouver in particular, often close to the warm sector/triple points of the various systems may see especially heavy rain at times, but most of the heaviest precipitation will be locked up as snow over the W slopes of the Rockies. This will help to mitigate against any significant impacts.

**Expected Impacts**

Some localised flooding is possible, particularly in and around the urban areas of Vancouver and Seattle. Flash flooding has already caused severe transport disruption in and around Vancouver, and more is likely this week.



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**Central America and Caribbean**

**North Bahamas** – See North America

**South America**

**Uruguay, northern Argentina, far south of Brazil.**

**Weather**

Daily rounds of vigorous thunderstorms are expected to develop over the next several days, bringing daily accumulations of 50 to locally 100mm of rain, and total accumulations of locally 250mm over the coming few days. Frequent lightning, hail and isolated tornadoes will also bring additional hazards.

**Discussion**

Active pulses along the South Atlantic Convergence Zone are signalled to develop over the coming days, with the zone slow moving over the region. As repeated plumes of tropical moisture are drawn south, organised and very deep, vigorous convection is likely to develop, particularly along the south of the plume close to modest forcing from waves running along the subtropical jet. Significant CAPE and vertical wind shear is present on forecast profiles, offering potential for large hail, gusty winds, and the odd tornado or two.

**Expected Impacts**

Flash flooding and enhanced risk of landslides, damage to infrastructure and property from large hail and lightning strikes also possible. Most of the affected area is sparsely populated, although impacts could be greater should urban areas such as Buenos Aires and Montevideo be affected.

**Africa**

Nil significant.

**Middle East**

Nil significant.

**Asia**

**India and Sri Lanka** – see *Tropical Cyclones* section

**Vietnam**

**Weather**

Heavy showers and thunderstorms are expected to continue across coastal Vietnam for the next few days, brought in on a persistent moist northeasterly wind. Typical daily accumulations in the region of 50-100 mm are expected, but some locations could see a daily total of as much as 150 mm. Cumulative totals of 200-300 mm are likely fairly widely through the coming week, on top of in places already incredibly heavy rainfall in recent days. This represents around 1 to 2 months worth of rainfall for these locations, but generally falls short of the monthly extremes.

**Discussion**

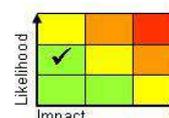
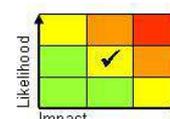
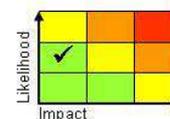
A persistent cold surge in the NE'ly monsoon flow will impinge on a large part of coastal Vietnam over the next few days, bringing in fairly persistent rounds of heavy showers and thunderstorms. Model signals indicate that rainfall is likely to be less than that which has been observed recently, with 960 mm in 48 hours at Da Nang leading to severe flooding in the city, transport disruption due to landslides, and two reported fatalities. Indeed, more modest accumulations of 10-30 mm were observed yesterday, but hue reported 98mm. However, daily totals could still approach 150 mm, with more likely 50-100 mm observed most days, and cumulative totals of 300 mm over the next 3 days before conditions ease next week.

**Expected Impacts**

Flash flooding of homes, businesses and urban areas. River flooding also possible. Disruption to transport and enhanced risk of landslides. Danger to life.

**Southern Thailand, Malaysia, Singapore, Indonesia (Borneo and South Sumatra)**

**Weather**



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Enhanced heavy shower activity is likely to continue in this region, particularly areas immediate adjacent to the South China Sea. 50-100 mm per day is likely to be recorded in various locations, with 300 mm accumulating over the next few days.

**Discussion**

The cold surge described above is now weakening, but looks likely to spawn a Borneo Vortex, which should it develop would bring a markedly enhanced area of showers and thunderstorms to coastal regions of Indonesia over the next few days. Equatorial Rossby Wave activity looks likely to enhance shower activity across the Malay Peninsula over the coming weekend too.

**Expected Impacts**

Localised flash flooding and enhanced risk of landslides are the most likely impacts.

**Australasia**

**Australia - North Queensland and east Queensland coast** – see *Tropical Cyclones* section

**Eastern Australia and Tasmania**

**Weather**

A deep area of Low Pressure is expected to develop over southeastern Australia today, which is likely to generate a band of organised, severe thunderstorms moving across eastern Australia, becoming slow moving over/near to the coast by the weekend. To the south and east of the low, strong to gale force winds are expected to develop, with the potential for severe gales (sustained winds of over 47 mph) around coastal areas of Victoria, northern Tasmania and south-east South Australia including Adelaide. There will also be accompanied by less heavy, but more persistent rain across these areas. Thunderstorms could generate 50-100 mm per day as they move through, whilst over 100 mm could fall in the space of a couple of days in the rain area further south. Parts of northeastern Tasmania exposed to the strong easterly wind could record much higher totals, 200-400 mm possible. This represents 1-2 months worth of rainfall for many areas, and possibly record breaking amounts in northeastern Tasmania.

**Discussion**

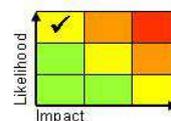
Models have consistently shown a sharp upper trough driving a cold front E into SE Australia drawing in a warm, very unstable plume of air ahead, and later cut-off to develop a potent and slow moving area of Low Pressure. Whilst much of this rain will be welcome, it is an unusually unsettled spell for this time of year and is likely to have some flooding impacts in the more densely populated areas along the east and south coasts. Whilst there are some differences in the shape, position and intensity of the Low, all models develop a depression in a similar area, and highlight the risk of very strong winds through the Tasman Sea and into Adelaide.

**Expected Impacts**

Flash flooding of urban areas around the coastline in particular, especially as the weather system becomes slow moving into the weekend. River flooding may become an increasing threat for parts of northeastern Tasmania. Large hail and lightning will pose an additional hazard, and danger to life. Strong winds developing may lead to some disruption to transport, and rough seas affecting maritime craft.

**Additional information**

Nil.



**Issued at:** 130745 UTC **Meteorologist:** Mark Sidaway

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